12. *SRM Activities to Support Nutritional Labeling*

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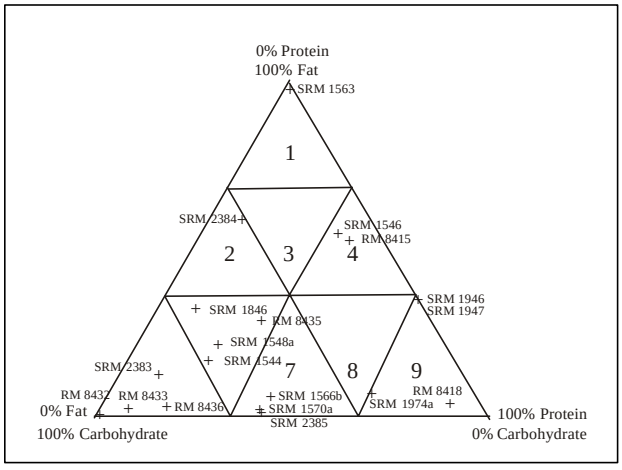
Objective: To develop food-matrix Standard Reference Materials (SRMs) to support nutrition labeling issues.

Problem: The Nutrition Labeling and Education Act (Public Law 96-359) requires that specific nutritional information be provided on all processed foods sold in the U.S. In a recent study by the U.S. Food and Drug Administration, the accuracy of label information ranged from 98% to 54% for nutrients for which labeling is required. As more food-matrix SRMs become available, label accuracy should improve when the food and nutrition communities employ these food-matrix SRMs in their analyses. Food-matrix SRMs are needed to validate analytical methods and for quality assurance when assigning concentration values to in-house control materials. Such reference materials will facilitate compliance with new nutritional labeling laws, provide traceability for food exports needed for acceptance in many foreign markets, and improve the accuracy of nutrition information that is provided to assist consumers in making sound dietary choices.

Approach: AOAC International has developed a nine-sectored triangle in which foods are positioned based on their fat, protein, and carbohydrate content. AOAC's belief is that one or two reference materials within each sector should be representative of other foods within that sector and could be used for quality assurance and method validation when analyzing those other foods. NIST does not have the resources or analytical capabilities necessary to measure all of the analytes for which labeling is required; therefore, nutrient concentrations in SRMs and RMs have been determined through collaborations with the food industry and food-related government regulatory agencies. Certified values are provided for analytes for which NIST alone (using two independent methods) or NIST and collaborating laboratories provide data. Reference or information values are provided for analytes for which only collaborating laboratories provide data.

Results and Future Plans: NIST is actively working to provide an increased array of SRMs with values assigned for proximates (procedurally defined values for fat, protein, carbohydrate, etc.), fatty acids, cholesterol, vitamins, elements of nutritional interest, etc. SRMs and RMs are now available or are in preparation for the sectors in the AOAC triangle shown.

In 1998, NIST certified SRM 1546 Meat Homogenate, a canned meat product containing ham, pork, and chicken. This material was developed at the request of U.S. Department of Agriculture's Food Safety Inspection Service. Concentration values were assigned based on values from NIST, from an interlaboratory comparison exercise involving 17 member laboratories of the National Food Processors Association's (NFPA's) Food Industry Analytical Chemists Subcommittee (FIACS), and from several additional collaborating laboratories. Concentration values have been assigned for proximates, cholesterol, individual fatty acids, water-soluble vitamins, and elements of nutritional interest.



Using data provided by collaborating laboratories, values have been assigned for proximate concentrations in ten existing SRMs and RMs: SRM 1563 Cholesterol and Fat-Soluble Vitamins in Coconut Oil (Natural and Fortified), SRM 1566b Oyster Tissue, SRM 1570a Spinach Leaves, SRM 1974a Organics in Mussel Tissue (*Mytilus edulis*), RM 8415 Whole Egg Powder, RM 8418 Wheat Gluten, RM 8432 Corn Starch, RM 8433 Corn Bran, RM 8435 Whole Milk Powder, and RM 8436 Durum Wheat Flour. (Most of the materials in this group previously had values assigned only for con-

centrations of inorganic analytes of nutritional or toxicological interest.)

SRM 2384 Baking Chocolate and candidate SRM 2385 Spinach are currently in preparation. These materials were developed as a result of a workshop held at NIST in 1997 in which SRM needs of the food industry were identified. Materials in sectors 2 and 7 of the AOAC triangle and a vegetable material with values assigned for persistent pesticides were the top three priorities identified. SRM 2384 Baking Chocolate lies in sector 2 of the AOAC triangle; with the assistance of NFPA's FIACS, values will be assigned for proximates, individual fatty acids, total dietary fiber, caffeine, theobromine, several water-soluble vitamins, and elements of nutritional interest. Candidate SRM 2385 Spinach lies in sector 7 of the AOAC triangle. (This material will be a canned material, unlike SRM 1570a, which is freeze-dried and finely-ground spinach leaves.) NIST-specified pesticides will be applied to candidate SRM 2385 at normal application rates when it is grown. The material is expected to have values assigned for proximates, individual fatty acids, total dietary fiber, elements of nutritional interest, vitamins, carotenoids, folates, and pesticides.

Recently we held a food-related reference materials needs assessment workshop at the AOAC meeting in Houston, TX with broad representation from the food, nutrition, and regulatory communities. High priority needs identified at the workshop include SRMs for nutraceuticals, allergens such as peanut proteins, additives and preservatives, juice authenticity, chondroitin sulfate, and moisture in grain, as well as a sugar standard for use as a calibrant. Future division activities in the food/nutritional area will be driven by this input.